

REMARKS

Applicant has carefully reviewed and considered the Office Action mailed on May 20, 2003, and the references cited therewith.

Claim 4 is amended; as a result, claims 2-6, 10-18, 29-30, 32-38, 50-52, 76, and 77 are now pending in this application.

§112 Rejection of the Claims

Claim 4 was rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claim 4 is amended to remove the term “second”. Thus, claim 4, as amended, is now clear.

§103 Rejection of the Claims

Claims 2-6, 10, 11, 13-15, 29, 30, 32, 37, 38, 50, 51, 76 & 77 were rejected under 35 USC § 103(a) as being unpatentable over Kahihara et al. in view of Gaulier et al. and Hayakawa et al.

Applicant's claimed invention includes a conductive layer, and a metal layer formed over the conductive layer. An oxide is formed by oxidizing a portion of the metal layer. Thus, the oxide of Applicant's claimed invention is not formed from the conductive layer but formed from a metal layer different from the conductive layer. Forming the oxide from a metal layer different from a conductive layer allows options for choosing materials other than the only material of the conductive layer.

For example, claim 2 recites:

“forming on a substrate assembly a conductive layer of a first material, the conductive layer having portions electrically isolated from one another;

forming a conformal metal layer of a second material atop the conductive layer; and

forming a dielectric by oxidizing at least a portion of the conformal metal layer.”

Analysis of the Kashihara et al. patent

Kashihara et al. disclose a number of capacitors having structures different from the structures of Applicant's claimed invention. In Kashihara et al., each of the capacitors has a lower plate, a top plate, and a dielectric between the lower plate and the top plate. Kashihara et al. do not suggest oxidizing a metal layer to form the dielectric.

Thus, Kashihara et al. do not disclose or suggest anything about forming a dielectric by oxidizing at least a portion of the conformal metal layer as claimed in claim 2.

Analysis of the Gaulier patent

Gaulier discloses a capacitor having a lower plate, a top plate, and an oxide (or dielectric) between the lower plate and the top plate. The oxide is formed by oxidizing a portion of the lower plate. FIG. 2 of Gaulier shows a lower plate 5 and an oxide 9 in which oxide 9 is formed by oxidizing lower plate 5. Therefore, in Gaulier, the oxide and the lower plate (conductive layer) are formed from the same material.

Thus, Gaulier does not disclose or suggest a dielectric formed by oxidizing a metal layer, in which the metal layer is different from a conductive layer. In contrast, the dielectric of claim 2 is formed from a material different from the material of the conductive layer.

Analysis of the Hayakawa et al. patent

Hayakawa et al. disclose a capacitor having a lower plate, a top plate, and an oxide between the lower plate and the top plate. Similarly to Gaulier, the oxide of Hayakawa et al. is formed by oxidizing a portion of the lower plate. FIG. 4 of Hayakawa et al shows a lower plate 5a and an oxide 6a in which oxide 6a is formed by oxidizing lower plate 5a. Hence, in Hayakawa et al, the oxide and the lower plate are formed from the same material.

Thus, Hayakawa et al do not disclose or suggest a dielectric formed by oxidizing a metal layer in which the metal layer is different a conductive layer. In contrast, the dielectric of claim 2 is formed from a material different from the material of the conductive layer.

Analysis of the combination of Kashihara et al., Gaulier, and Hayakawa et al. patents

Kashihara et al. do not disclose or suggest forming a dielectric by oxidizing at least a portion of the conformal metal layer. Gaulier does not disclose or suggest forming the oxide from a metal layer in which the metal layer different from a conductive layer. Hayakawa et al. do not disclose or suggest forming the oxide from a metal layer in which the metal layer different from a conductive layer.

In contrast, Applicant's claim 2 recites that the dielectric is formed by oxidizing at least a portion of the conformal metal layer, in which the conformal metal layer has a second material and the conductive layer has a first material. Thus, in claim 2, the dielectric is formed from a material "different" from the material of the conductive layer.

The discussion presented above demonstrates that Kashihara et al. do not disclose or suggest forming the oxide from a metal layer in which the metal layer different from a conductive layer. Neither Gaulier nor Hayakawa et al. discloses or suggests forming the oxide from a metal layer in which the metal layer different from a conductive layer. Therefore, the Office Action fails to state a prima facie showing of obviousness because the Office Action provides no evidence of a reason to combine Kashihara et al., Gaulier, and Hayakawa et al.

Further, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991); MPEP § 2143. The Examiner must avoid hindsight. *In re Bond*, 910 F.2d 831, 834, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990).

Moreover, the claimed invention as claimed in claim 2 was not considered as a whole. In determining the differences between the prior art and the claim, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985); MPEP § 2141.02.

All of the reasons presented above show that claim 2 is not obvious over the combination of Kashihara et al., Gaulier, and Hayakawa et al. Therefore, Applicant requests that the rejection

of claims 2 be reconsidered and withdrawn and that claim 2 and its dependent claims 3-6 be allowed.

Independent claims 10, 11, 29, 32, 37, and 76 recite elements similar to the elements of claim 2. Thus, claims 10, 11, 29, 32, 37, and 76 are also not obvious over the combination of Kashihara et al., Gaulier, and Hayakawa et al. for the same reasons presented above. Accordingly, Applicant requests that the rejection of claims 10, 11, 29, 32, 37, and 76 be reconsidered and withdrawn and that claims 10, 11, 29, 32, 37, and 76 and their dependent claims 13-15, 30, 33, 38, 50-52 and 77 be allowed.

Claims 16-18 were rejected under 35 USC § 103(a) as being unpatentable over Kahihara et al. in view of Gaulier et al. and Hayakawa et al. as applied to claims 2-6, 10, 11, 13-15, 29, 30, 32, 37, 38, 50, 51, 76 & 77 above, and further in view of Dickey et al.

Claims 16-18 depend from claim 11. As discussed above, claim 11 is patentable over the combination of Kashihara et al., Gaulier, and Hayakawa et al. Claim 11 is also patentable over the combination of Kashihara et al., Gaulier, Hayakawa et al., and Dickey et al. for reasons similar to the reasons presented above regarding claim 2. Thus, claims 16-18 are also patentable over the combination of Kashihara et al., Gaulier, Hayakawa et al., and Dickey et al. because claims 16-18 depend from the patentable claim 11. Accordingly, Applicant requests that the rejection of claims 16-18 be reconsidered and withdrawn and that claims 16-18 be allowed.

Claim 12 was rejected under 35 USC § 103(a) as being unpatentable over Kahihara et al. in view of Gaulier et al. and Hayakawa et al. as applied to claims 2-6, 10, 11, 13-15, 29, 30, 32, 37, 38, 50, 51, 76 & 77 above, and further in view of Jones Jr. et al.

Claim 12 depends from claim 11. As discussed above, claim 11 is patentable over the combination of Kashihara et al., Gaulier, and Hayakawa et al. Claim 11 is also patentable over the combination of Kashihara et al., Gaulier, Hayakawa et al., and Jones Jr. et al. for reasons similar to the reasons presented above regarding claim 2. Thus, claim 12 is also patentable over the combination of Kashihara et al., Gaulier, Hayakawa et al., and Jones Jr. et al. because claim 12 depends from the patentable claim 11. Accordingly, Applicant requests that the rejection of claim 12 be reconsidered and withdrawn and that claim 12 be allowed.

Allowable Subject Matter

Claims 34-36 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 34-36 depend from claim 32. Based on the reasons presented above, claim 32 is allowable. Thus, claims 34-36 are also allowable as written.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's representative 612-373-6969 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.


Respectfully submitted,

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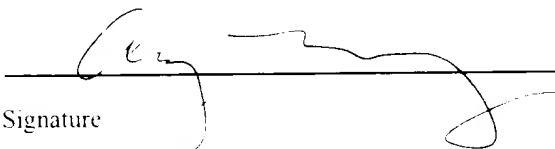
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